

IN THE SPECIFICATION:

Amend the specification as follows:

Paragraph beginning at page 1, line 2 has been amended as follows:

Digital Camera Which Produces A Single Image Based On Two Exposures

Paragraph beginning at page 1, line 5 has been amended as follows:

Field of the ~~invention~~ Invention

Paragraph beginning at page 1, line 10 has been amended as follows:

Description of the ~~prior art~~ Related Art

Paragraph beginning at page 1, line 11 has been amended as follows:

[[The]] A digital camera employs an image sensor, such as a CCD imager, to shoot a subject. If the CCD imager is given a subject image in front thereof, light receiving elements produce electric charges ~~proportionally~~ in proportion to the amount of light through photoelectric conversion. The charges thus produced are outputted through the vertical and horizontal transfer registers. By performing a predetermined signal process on these charges (camera signal), a subject image is reproduced on a monitor. The subject image is also recorded to a memory medium.

[Paragraph beginning at page 1, line 18 has been amended as follows:]

However, there is a limitation in the charge amount to be stored on the light receiving elements. Consequently, if the subject image has an extremely-high light quantity area (bright area), saturation of charge possibly occurs in such an area. Thus, in the conventional digital camera there has been a limitation in the dynamic range for a shot subject image.

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[Paragraph beginning at page 2, line 23 has been amended as follows:]

According to [[this]] the present invention, the CCD imager has light receiving elements ~~in number~~ vertically in a first predetermined number and horizontally in a second predetermined number, and includes the second predetermined number of vertical transfer registers each having the first predetermined number of transfer region and a horizontal transfer register connected to output ends of the vertical transfer registers. The timing generator supplies predetermined timing signals to the CCD imager.

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[Paragraph beginning at page 3, line 4 has been amended as follows:]

First exposure for a first predetermined period is effected by a first exposure signal. The first charge produced by the first exposure is read by a first read signal from the first light receiving elements positioned vertically intermittently to the vertical transfer registers. The first charge thus read is moved to vacant transfer regions of the vertical transfer registers by a charge moving signal. Second exposure for a second predetermined period different from the first predetermined period is effected by a second exposure signal. A second charge produced due to

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the second exposure is read by a second read signal from the second light receiving elements positioned vertically intermittently to the vertical transfer registers. The first and second charges thus read on the vertical transfer registers are vertically transferred by a first vertical transfer signal, being delivered to the horizontal transfer register. The first and second charges given to the horizontal transfer register ~~[[is]]~~ are thereafter horizontally transferred by a first horizontal transfer signal.

[Paragraph beginning at page 3, line 19 has been amended as follows:]

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Because one screen of an image signal is created on a first change produced due to a first exposure for a first predetermined period and a second charge due to a second exposure, the dynamic range for the shot image can be broadened.

[Paragraph beginning at page 3, line 22 has been amended as follows:]

According to one embodiment, the first light receiving elements and the second light receiving elements are the same light receiving elements. Also, the charge moving signal is a signal to move the first charge simultaneously with or prior to reading out the second charge. Here, the moving distance of the first charge is greater than a distance that the first light receiving elements vertically continue. When the first light receiving elements of N ($N \geq 1$) in number exist vertically intermittently for each, the first charge moves over at least a distance corresponding to the first light receiving elements of N in number.

[Paragraph beginning at page 4, line 5 has been amended as follows:]

In another embodiment of the present invention, an image corresponding to the first image signal is displayed on the monitor connected to the first processor.

[Paragraph beginning at page 4, line 7 has been amended as follows:]

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In one aspect of the invention, when a shutter button is operated, a third exposure signal is outputted from the timing generator. ~~Due to this~~ As a result, third exposure is effected for a third predetermined period. A third charge produced ~~due to~~ as a result of the third exposure is read from all the light receiving elements to the vertical transfer registers by a third read signal. The third charge read to the vertical transfer register is vertically transferred by a second vertical transfer signal to the horizontal transfer register. The third charge on the horizontal transfer register is thereafter horizontally transferred by a second horizontal transfer signal.

[Paragraph beginning at page 4, line 15 has been amended as follows:]

After the third exposure, a fourth exposure signal is outputted from the timing generator, thereby starting fourth exposure. Elapsing a fourth predetermined period, a shutter member is driven by a drive signal whereby light incidence onto the CCD imager is blocked off by the shutter member. That is, the fourth exposure ends by a mechanical shutter scheme. A fourth charge produced ~~due to~~ as a result of the fourth exposure, after completing vertical transfer of the third charge, is read from all the light receiving elements to the vertical transfer registers by a fourth read signal. The fourth charge read to the vertical transfer registers is then vertically

transferred by a third vertical transfer signal to the horizontal transfer register. The fourth charge
on the horizontal transfer register is thereafter horizontally transferred by a third horizontal
transfer signal, thus being outputted to the CCD imager.

Paragraph beginning at page 5, line 4 has been amended as follows:

A digital camera according to the present invention, comprises: a CCD imager having
light receiving elements vertically and horizontally arranged respectively in a first predetermined
number and a second predetermined number, and including the second predetermined number of
vertical transfer registers each having the first predetermined number of transfer regions and a
horizontal transfer register connected to output ends of the vertical transfer registers; a first
exposure means for giving first exposure or first predetermined period to the CCD imager; a first
read means for reading a first charge created due to the first exposure from first light receiving
elements positioned vertically intermittently to the vertical transfer registers; a charge moving
means for moving the first charge to vacant transfer regions of the vertical transfer registers; a
second exposure means for giving second exposure to the CCD imager for a second
predetermined period different from the first predetermined period; a second read means for
reading second charge created due to the second exposure from second light receiving elements
positioned vertically intermittently to the vertical transfer registers; a first vertical transfer means
for vertically transferring the first charge and the second charge over the vertical transfer
registers; a horizontal transfer means for horizontally transferring the first charge and the second
charge given to the horizontal transfer register; and a first image signal creating means for

creating one screen of a first image signal based on the first charge and the second charge that have been outputted from the horizontal transfer register.

¶ Paragraph beginning at page 5, line 23 has been amended as follows:

According to [[this]] the present invention, a CCD imager has light receiving elements vertically and horizontally arranged respectively in a first predetermined number and a second predetermined number, and includes the second predetermined number of vertical transfer registers each having the first predetermined number of transfer regions and a horizontal transfer register connected to output ends of the vertical transfer registers. The first exposure means causes the CCD imager thus structured to effect first exposure for a first predetermined period. The first read means reads the first charge produced due to the first exposure from the first light receiving elements positioned vertically intermittently to the vertical transfer registers. The first charge thus read is moved to vacant transfer regions of the vertical transfer registers by the charge moving means.

¶ Paragraph beginning at page 6, line 8 has been amended as follows:

On the other hand, the second exposure means causes the CCD imager to effect second exposure for a second predetermined period different from the first predetermined period. The second read means reads the second charge produced ~~due to~~ as a result of the second exposure from the second light receiving elements positioned vertically intermittently to the vertical transfer registers. The first and second charges thus read to the vertical transfer registers are

vertically transferred by the first vertical transfer means. The first and second charges when delivered to the horizontal transfer register are horizontally transferred by the first transfer means. The first image signal creating means creates one screen of a first image signal based on the first and second charges outputted from the horizontal transfer register.

[Paragraph beginning at page 6, line 18 has been amended as follows:]

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Because one screen of an image signal is created based on the first charge produced ~~due~~ to as a result of the first exposure for the first predetermined period and the second charge ~~due to~~ as a result of the second exposure for the second predetermined period, the dynamic range can be broadened for a shot image.

[Paragraph beginning at page 6, line 22 has been amended as follows:]

In one embodiment of [[this]] the present invention, the first light receiving elements and the second light receiving elements are the same light receiving elements. The charge moving means moves the first charge simultaneous with or prior to reading out the second charge. Here, the first charge has a moving distance greater than a distance that the first light receiving elements vertically continue. That is, when the first light receiving elements of N ($N \geq 1$) in number exist vertically intermittently for each, the first charge moving over at least a distance corresponding to the first light receiving elements of N in number.

[Paragraph beginning at page 7, line 4 has been amended as follows:]

In another embodiment of the present invention, the first exposure means and the second exposure means are of an electronic shutter scheme to ~~[[give]]~~ provide the first exposure and the second exposure.

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[Paragraph beginning at page 7, line 7 has been amended as follows:]

In still another embodiment of the present invention, an image corresponding to the first image signal is displayed on a monitor.

Paragraph beginning at page 7, line 9 has been amended as follows:

In one aspect of ~~[[this]]~~ the present invention, when a shutter button is operated, a third exposure is effected for a third predetermined period by a third exposure means. The third charge produced ~~due to~~ as a result of the third exposure is read from all the light receiving elements to the vertical transfer registers by a third read means, and thereafter vertically transferred by a second transfer means. When the third charge is delivered by vertical transfer to the horizontal transfer register, a second horizontal transfer means horizontally transfers the third charge. A fourth exposure means effects fourth exposure after the third exposure. Elapsing a fourth predetermined period from a start of the fourth exposure, a drive means drives a shutter member. ~~Due to~~ As a result of this, light ~~incidence~~ incident onto the CCD imager is blocked off, thus ending the fourth exposure.

[Paragraph beginning at page 7, line 19 has been amended as follows:]

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The fourth charge produced ~~due to~~ as a result of the fourth exposure, after completing vertical transfer of the third charge, is read by a fourth read means from all the light receiving elements to the vertical transfer registers. The read charge is vertically transferred to the horizontal transfer register by a third vertical transfer means. The fourth charge delivered to the horizontal transfer register is thereafter horizontally transferred by a third horizontal transfer means. A second image signal creating means creates one screen of a second image signal based on the third and fourth charges outputted from the horizontal transfer registers. The created second image signal is recorded in a compression state to a recording medium by a recording means.

Paragraph beginning at page 8, line 8 has been amended as follows:

Figure 1 is a block diagram showing one embodiment of ~~[[this]]~~ the present invention;

Figure 2 is an illustrative view showing a CCD imager applied to the Figure 1 embodiment;

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Figure 3 is a block diagram showing one part of a timing generator applied to the Figure 1 embodiment;

Figure 4 is a timing chart showing one part of operation in a camera mode of the Figure 1 embodiment;

Figure 5 is an illustrative view showing one part of operation in the camera mode of the Figure 1 embodiment;

Figure 6 is a timing chart showing one part of operation of the Figure 1 embodiment

when a shutter button is pressed;

Figure 7 is a block diagram showing another embodiment of ~~[[this]]~~ the present invention;

Figure 8 is a block diagram showing one part of a timing generator applied to the Figure 7 embodiment;

Figure 9 is an illustrative view showing one part of operation in a camera mode of the Figure 7 embodiment;

Figure 10 is an illustrative view showing another part of operation in the camera mode of the Figure 7 embodiment;

Figure 11 is a timing chart showing one part of operation in the camera mode;

Figure 12 is a detailed timing chart for a period A shown in Figure 11;

Figure 13 is a detailed timing chart for a period B shown in Figure 11; and

Figure 14 is a detailed timing chart for a period C shown in Figure 11.

Paragraph beginning at page 9, line 7 has been amended as follows:

Referring to Figure 1, a digital camera 10 of this embodiment includes an optical lens 12 and a shutter member 14 that mechanically operates to block off incoming light. A subject image is given through the optical lens 12 and shutter member 14 to a CCD imager 16 of an interline transfer scheme. The CCD imager 16, with a resolution of XGA, includes pixels arranged in the number of "horizontally 1280" and vertically "960".

[Paragraph beginning at page 9, line 12 has been amended as follows:]

The CCD imager 16 is formed with a plurality of light receiving elements 16a, as shown in Fig. 2. The light receiving elements 16a have, [[at a]] in front, a primary color filter 15 having filter elements of R, G and B arranged in a mosaic form. The light receiving elements 16a constitute pixels for the CCD imager 16, wherein each light receiving element 16a ~~correspond~~ corresponds to any of the filter elements. The subject image is passed through the primary color filter 15 formed as above to the light receiving elements 16a for photoelectric conversion.

[Paragraph beginning at page 9, line 19 has been amended as follows:]

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The charge thus photoelectrically converted by the light receiving element 16a is read onto a vertical transfer register 16b. The vertical transfer registers 16b are arranged in number of horizontally 1280. Each vertical transfer registers 16b is formed by a plurality of metals. Three metals correspond to one light receiving element 16a, and the three metals form one transfer region. During charge reading, ~~decreased is~~ the potential on a central metal is decreased, shown by hatching, of the three metals forming one transfer region. ~~Due to~~ As a result of this, the charge stored on each light receiving element 16a can be read onto a vertical transfer register 16b without being mixed with the charge of other elements. The charge thus read is vertically transferred without being mixed with the charges of other elements, by varying the potentials on the metals. The vertical transfer registers 16b [[has]] have their output ends connected with a horizontal transfer register 16c. The horizontal transfer register 16c, each time 1 line of charge is inputted from each vertical transfer register 16b, transfers the same charge in the horizontal

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direction. In this manner, the charges stored on the light receiving elements 16a ~~[[is]]~~ are
outputted ~~time by time~~ line-by-line as a camera signal.

Paragraph beginning at page 10, line 21 has been amended as follows:

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In a camera mode in order to display motion images real time on an LCD 38, a charge sweep pulse XSUB, a charge read pulse XSG, a vertical transfer pulse XVI and a horizontal transfer pulse XH1 are outputted in timing shown in Figure 4(B) - (C) with respect to a vertical synchronizing signal Vsync shown in Figure 4(A). First, in synchronism with a vertical synchronizing signal Vsync a charge sweep pulse XSUB is outputted to sweep away all the charges accumulated on the light receiving element 16a. From this time, first exposure is started and newly produced charges are accumulated on the light receiving element 16a. Elapsing a predetermined time, a charge read pulse XSG is outputted and the charges accumulated on a predetermined light receiving element 16a 5 are read onto the vertical transfer register 16b.

[Paragraph beginning at page 11, line 6 has been amended as follows:]

The LCD 38 has a resolution of VGA. In the camera mode, a camera signal of 1280 pixels X 140 lines provides creation of a display image of 640 pixels X 480 lines. ~~Due to~~ As a result of this, in the case that 8 lines are taken as 1 unit to assign VI - V8 to each line, the charge ① accumulated on the lines V5 and V8 is read out. In this manner, when the charge ① of 1280 pixels X 140 lines has been read out, the first exposure is ended.

Paragraph beginning at page 11, line 11 has been amended as follows:

Referring back to Figure 4, immediately after ending the first exposure, a charge sweep pulse XSUB is outputted to start second exposure from this time. Elapsing a predetermined time, a charge read pulse XSG ~~same as~~ identical to the first exposure is again outputted to read out charges of 1280 pixels X 140 lines from the same light receiving element 16a as in the first exposure. At this time, the second exposure is ended. If the second exposure is ended, charge sweep pulses XSUB are repeatedly outputted until a next first exposure is started, consecutively sweeping away the charges accumulated on the light receiving element 16a.

Paragraph beginning at page 11, line 19 has been amended as follows:

The vertical charge transfer ~~due to~~ as a result of the vertical transfer pulse XVI and horizontal charge transfer ~~due to~~ as a result of the horizontal transfer pulse XH1 are started ~~simultaneous~~ simultaneously with reading out the charges obtained by the second exposure. In the camera mode ~~used are~~ only 240 lines are used that is, 1/4 of 960 lines of light receiving elements 16a, leaving a vacant transfer region of 720 lines to the vertical transfer register 16b. ~~Due to~~ As a result of this, as shown in Figure 5(B), the charge ① based on the first exposure is vertically moved ~~simultaneous~~ simultaneously with reading out the charge ② based on the second exposure.

Paragraph beginning at page 12, line 1 has been amended as follows:

The light receiving element 16a to be read out are intermittently positioned ~~one by one~~

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one-by-one with respect to the vertical direction, and the moving distance of the charge ① is at least a distance between adjacent light receiving elements 16a. ~~Due to~~ As a result of this, the charge ① moves to a transfer region (vacant transfer region) corresponding to a light receiving element 16a now not to be read out. At a time point that the charge ② is read out, the charges ① and ② exist on every other line without being mixed with each other. The charges ① and ② are vertically transferred in this state and then horizontally transferred through the horizontal transfer register 16c. Through the horizontal transfer register 16c the charge ① (first camera signal) and the charge ② (second camera signal) are alternately outputted ~~line-by-line~~ line-by-line.

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[Paragraph beginning at page 12, line 11 has been amended as follows:]

Referring to Figure 1, the first camera signal and the second camera signal outputted from the CCD imager 16 are subjected to well-known noise removal and level adjustment by a CDS/AGC circuit 18, and then converted into first camera data and second camera data by an A/D converter 20.

Paragraph beginning at page 12, line 24 has been amended as follows:

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The 2-screen compositing circuit 32 selects a signal having a brightness satisfying a predetermined condition from the simultaneously-inputted first and second camera data. In this embodiment, the first exposure time is ~~longer~~ greater than the second exposure time, and, accordingly, the second camera data is employed for a subject high brightness portion while the first camera data is for a low brightness portion. In this manner, ~~created~~ is composite camera data

is created having 1280 pixels X 240 lines that is broadened in dynamic range in a pseudo fashion.

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The composite camera data is thereafter subjected to YUV conversion, thinning-out, interpolation and the like by a signal processing circuit 34, and thereby created into image data having 640 pixels X 480 lines. The created image data is outputted into the LCD 38. As a result, real time motion pictures (through pictures) are displayed.

Paragraph beginning at page 13, line 15 has been amended as follows:

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That is, nearly ~~simultaneous~~ simultaneously with a picture taking instruction, a charge sweep pulse XSUB is outputted almost ~~simultaneous~~ simultaneously with the picture taking instruction, to start a third exposure. Elapsing a predetermined period, a charge read pulse XSG is outputted to read charges of 1280 pixels X 960 lines from all the light receiving elements 16a onto the vertical transfer registers 16b. At this time, the third exposure is ended. When the shutter button 42 is operated, charges are read from all the light receiving elements 16a. Accordingly, no vacant areas are formed on the vertical transfer registers 16b, differently from the camera mode. A vertical transfer pulse XVI and horizontal transfer pulse XH1 are outputted immediately after ending the third exposure. The third charge, or third camera signal, read out onto the vertical transfer registers 16b is promptly outputted through the horizontal transfer register 16c.

[Paragraph beginning at page 14, line 1 has been amended as follows:]

Immediately after outputting a charge read pulse XSG, a charge sweep pulse XSUB is outputted to start fourth exposure nearly ~~simultaneous~~ simultaneously with the start of vertical

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transfer. Elapsing a predetermined time from a start of the fourth exposure, a shutter drive signal rises to drive a shutter member 14. ~~Due to~~ As a result of this, incident light is blocked off, thus ending the fourth exposure. In this manner, third exposure starting and ending as well as fourth exposure starting are controlled by an electronic shutter scheme. However, fourth exposure ending is controlled by a mechanical shutter scheme.

[Paragraph beginning at page 14, line 8 has been amended as follows:]

With a mechanical shutter scheme, the incidence of light onto the CCD imager 16 is actually blocked off by the shutter member 14 arranged in front of the CCD imager 16. Accordingly, there is no need to read out charges immediately after elapsing an exposure period. Thus, even after closure of the shutter member 14, the charges are held on the light receiving elements 16a. After completing vertical and horizontal transfer of the third charge based on third exposure, a charge read pulse XSG is outputted. ~~Due to~~ As a result of the charge read pulse XSG, a fourth charge of 1280 pixels X 960 lines based on fourth exposure is read out of the light receiving elements 16a. Because after completing the reading out, the shutter member 14 is no longer required to be closed, the shutter drive signal is fallen to open the shutter member 14. Meanwhile, immediately after reading the third charge out of the light receiving elements 16a, a vertical transfer pulse XVI and horizontal transfer pulse XH1 are outputted. Thus, a fourth charge, i.e., fourth camera signal, based on fourth exposure is outputted.

[Paragraph beginning at page 14, line 21 has been amended as follows:]

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In this manner, when the shutter button 42 is operated, a third camera signal and a fourth camera signal are individually outputted from the CCD imager 16. The output third camera signal and fourth camera signal are respectively converted into third camera data and fourth camera data through the processing of CDS/AGC, similarly to the above. The CPU 40 causes the switch SW1 to connect to the terminal SI when third camera data is outputted from the A/D converter 20. The third camera data is written onto the frame memory 28 by the memory control circuit 24. When all the third camera data is written onto the frame memory 28, the CPU causes the switch SWI to connect to the terminal S3. Accordingly, the fourth camera data to be outputted following the third camera data from the A/D converter 20 is directly inputted to the 2-screen compositing circuit 32.

Paragraph beginning at page 16, line 13 has been amended as follows:

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Referring to Figure 8, the TG 22 includes an H counter 22h and a V counter 22i. The H counter 22h is to count the number of horizontal pixels. A horizontal count value is reset in response to a horizontal sync signal and decremented responsive to a pixel clock. On the other hand, the V counter 22i is to count the number of vertical lines. A vertical count value is reset in response to a vertical sync signal and incremented responsive to a horizontal synchronizing signal. Both the horizontal and vertical count values are delivered to the decoders ~~12j-22s~~ 22j-22s.

[Paragraph beginning at page 17, line 4 has been amended as follows:]

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As stated before, each light emitting element 16a of the CCD imager 16 correspond to three metals. The vertical transfer pulses VI, V3, V2A and V2B outputted from the TG 22 are applied to the respective metals in a manner shown in Figure 9 and Figure 10. That is, considering three metals assigned to each light receiving element 16a, a VI pulse is applied to an uppermost metal and a V3 pulse is to a central metal. A V2A or V2B pulse is applied to a lowermost vertical transfer pulse. The ones to which the VIA and V2B pulses are applied are switched every 2 pixels. That is, Figure 9 shows pixels on an odd numbered column. On the odd numbered column, for the vertically continuing R pixel, G pixel, R pixel and G pixel, a V2A pulse is supplied to the upper half, i. e. the R pixel and G pixel while a V2B pulse is given to the lower half, i.e., the R pixel and G pixel. Figure 10 shows pixels on an even numbered column. Herein, a V2A pulse is supplied to the G pixel and B pixel as the upper half of continuing 4 pixels while a V2B pulse is given to the lower half G pixel and B pixel.

[Paragraph beginning at page 17, line 18 has been amended as follows:]

Explanation will be made on the output timings of the vertical transfer pulses VI, V3, V2A and V2B with reference to Figure 11 to Figure 14. In a duration A immediately after conducting long-time exposure (first exposure) shown in Figure 11, the respective pulses vary as shown in Figure 12. When the V2A pulse becomes a plus in level, the first charge on a corresponding pixel is read onto the vertical transfer register 16b. After read out, the VI and V3 pulses assume twice a pulse level in different timing from each other. Also, the V2A and V2B pulses simultaneously assume twice a minus level. ~~Due to~~ As a result of this, the first charge is

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vertically moved by 2 lines.

Paragraph beginning at page 18, line 12 has been amended as follows:

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Short-time exposure (second exposure) is started immediately after reading out the charge in the period A. ~~Due to~~ As a result of this, the charge is again accumulated on each light receiving element 16a. In a period B beginning from the completion of short-time exposure, the ~~pulse~~ pulses vary as shown in Figure 13. First, the V2A pulse becomes once a plus level, and the charge on a corresponding pixel is read onto the vertical transfer register 16b. On an odd numbered column shown in Figure 9, respective charges R4S and G4S are read out of adjacent pixels R4 and G4, and respective charges R2S and G2S are read from the pixels R2 and G2 adjacent through a distance of 2 pixels. On the other hand, on an even numbered column shown in Figure 10, respective charges G4S and B4S are read out of adjacent pixels G4 and B4, and respective charges G2S and B2S are read from the pixels G2 and B2 adjacent through a distance of 2 pixels.

Paragraph beginning at page 19, line 10 has been amended as follows:

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In the period C the pulses vary as shown in Figure 14. First, the V1 pulse becomes once a plus level, and then the V2A and V2B pulses simultaneously become once a minus level. Thereafter, the V3 pulse becomes once a plus level. ~~Due to~~ As a result of this, the charge on the vertical transfer register 16b is vertically transferred by 1 line. That is, the first and second charges are vertically transferred each 2 lines in a coexisting fashion. Thereafter, vertical transfer

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pulses VI, V2A, V2B and V3 are outputted in a procedure as shown in Figure 14, and the charge on each line is transferred toward the horizontal transfer register 16c.

Paragraph beginning at page 19, line 21 has been amended as follows:

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The first or second charge delivered to the horizontal transfer register 16c is then horizontally transferred by an HI pulse and outputted line by line from the CCD imager 16. At this time, a first camera signal continues over a 2-line period, and subsequently a second camera signal continues over a 2-line period. The switch SW1 is switched between the terminals S2 and S3 every 2-line period. ~~Due to~~ As a result of this, the first camera data outputted from the A/D converter 20 is supplied to the 2-screen compositing circuit 42 via a line memory 30. Similarly, the second camera data outputted from the A/D converter 20 is given as it is to the 2-screen compositing circuit 32. That is, first and second camera data related to each other are simultaneously inputted to the 2-screen compositing circuit 32.

Paragraph beginning at page 20, line 17 has been amended as follows:

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Here, the light receiving element from which the first charge is to be read out is the same as the light receiving element that the second charge is to be read out. The first charge is transferred to a vacant transfer region of the vertical transfer register simultaneously with or prior to reading out the second charge. Furthermore, the moving distance of the first charge is equal to or greater than a distance between the light receiving elements to be read out. ~~Due to~~ As a result of this, there is no possibility that the first and second charges be mixed with each other. By

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implementing a composite process based on the first and second charges as above, it is possible to display on the LCD images whose dynamic range is broadened in a pseudo fashion.

[Paragraph beginning at page 21, line 1 has been amended as follows:]

Also, when the shutter button is pressed, light ~~incidence~~ incident onto the CCD imager is actually blocked off by the mechanical shutter scheme. This eliminates the necessity to read out the charge immediately after exposure ending. The charges can be held on the light receiving elements. That is, a fourth exposure can be made even while a third camera 5 signal is ~~being~~ being ~~outputted~~ third exposure. Thus, it is possible to bring close in timing the third exposure and fourth exposure in timing ~~[[to]]~~ each other. As a result, even where the subject is moving at high speed, ~~blurring is prevented from occurring in the record image.~~

Paragraph beginning at page 21, line 19 has been amended as follows:

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Furthermore, the first exposure and second exposure by the electronic shutter scheme as well as the compositing process with the first and second camera data based on the exposures are implemented only in a camera mode, i.e., a through-image display mode. However, such process is applicable also to a motion-image record mode to record moving images to a recording medium.
